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THE ORTHOPAEDIC FORUM

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New CMS Policy on the Mandatory Collection of Patient-Reported Outcome Measures for Total Hip and Knee Arthroplasty by 2027

What Orthopaedic Surgeons Should Know

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Abstract: The Centers for Medicare & Medicaid Services (CMS) has finalized a landmark national policy to standardize and expand the collection and reporting of patient-reported outcome measures (PROMs) following total hip arthroplasty (THA) and total knee arthroplasty (TKA). This policy will be rolled out through phased implementation, beginning with voluntary reporting starting in 2023 and transitioning to mandatory reporting starting in 2025, which will be tied to hospital payment determinations in fiscal year 2028. The overarching goal of this policy is to gather meaningful pre- and post-operative PROM data directly from patients to enhance clinical care, shared decision-making, and quality measurement for these common elective procedures. This national initiative underscores the value of incorporating patient perspectives and priorities into assessments of surgical care quality. For orthopaedic surgeons and hospitals, participating in the initial voluntary reporting period provides an opportunity to integrate PROM collection into clinical workflows and to leverage these data to improve patient care. The achievement of robust PROM response rates and a strong performance on the underlying THA/TKA Patient-Reported Outcome-Based Performance Measure may have increasing relevance as payment models shift toward value-based care. The aim of the present forum was to provide an in-depth review of this new CMS policy and key details regarding required PROM instruments, data-collection time frames, and other specifications that surgical teams should understand as they prepare for implementation. The goal was to equip orthopaedic surgeons with actionable information as they embark on this new era of national PROM collection and reporting.

The Expanding Role of Patient-Reported Outcome Measures in Orthopaedics

Patient-reported outcome measures (PROMs) are important tools for capturing patients' perspectives on their health status and quality of life following medical treatments[1,2]. PROMs are standardized instruments that allow patients to self-report on outcomes such as pain, functional status, and overall well-being. Integrating PROMs into routine clinical practice and quality measurement can enhance patient-centered care and provide critical information from patients regarding their

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health outcomes[3-5]. As a result of a growing interest in shifting U.S. health care from volume-driven systems to value-based systems focused on patient outcomes relative to cost, demand has risen for the robust measurement of patient benefit. PROMs have become increasingly important quality metrics to include in value determinations[6]. As care transitions toward patient-centered models that are tied to value, PROMs provide meaningful data on the outcomes most valued by patients[7,8]. The inclusion of PROMs in quality measurement and value-based frameworks elevates the patient voice in defining high-value care delivery[9,10]. Although PROMs provide meaningful insights into outcomes from the patient perspective, there are also potential limitations to their use. Some studies have found that patients with lower socioeconomic status or education level had lower PROM completion rates than those with higher socioeconomic status or education level[7,8]. This difference in PROM completion rates could disincentivize surgeons from caring for more complex patient populations. Additionally, PROMs are limited in their ability to detect differences in outcomes among highly active patients aiming to return to demanding activities[7,8]. Despite these limitations, PROMs remain useful tools for incorporating the patient voice into assessments of care quality and outcomes. Cognizance of PROM limitations is important when interpreting data.

In recent years, the Centers for Medicare & Medicaid Services (CMS) has taken steps to expand the use of PROMs in total hip arthroplasty (THA) and total knee arthroplasty (TKA)[11,12]. In 2016, CMS established an incentivized program for PROM collection within the Comprehensive Care for Joint Replacement (CJR) model[13]. This program aimed to gather pre- and postoperative PROM data from patients undergoing an elective, primary THA or TKA. The goal was to obtain patient-reported data to support the development of a hospital-level performance measure on patient outcomes following these procedures.

Now, CMS has finalized a new nationwide policy to standardize and broaden the collection and reporting of PROMs for THAs and TKAs. CMS plans to implement the THA/TKA Patient-Reported Outcome-Based Performance Measure (PRO-PM) in phases, with 2 voluntary reporting periods, a 2025 period (encompassing data submission in 2023 and 2024) and a 2026 period (encompassing data submission in 2024 and 2025), followed by mandatory public reporting in 2027 (with required data submission in 2025 and 2026). Data collected in the mandatory reporting period will be utilized in the Hospital Inpatient Quality Reporting (IQR) program, beginning with the fiscal year 2028 payment determination[14]. This policy seeks to establish consistent protocols for gathering PROM data from patients before and after surgery. It intends to make more PROM data available for use in quality measurement, clinical care, and shared decision-making. The policy also aims to provide patients who are considering hip or knee replacement with useful insights from other patients regarding recovery and outcomes. This transparency around PROM results could motivate improvements in patient-care practices and outcomes. The new CMS policy outlines requirements for PROM collection and reporting for THAs and TKAs across several domains. It specifies the PROM instruments to be utilized, time frames for data collection, minimum case thresholds for reporting, and other key details.

The aim of the present forum was to provide an in-depth review of this new CMS policy and key details regarding PROM instrument requirements, data-collection time frames, and other specifications that surgical teams should understand as they prepare for implementation. The goal was to equip orthopaedic surgeons with actionable information as they embark on this new era of national PROM collection and reporting.

Development of the New CMS Hospital-Level THA/TKA PRO-PM

The THA/TKA PRO-PM was developed over a multiyear period with use of a multifaceted approach to develop the specifications of the measure. This approach included conducting environmental scans and literature reviews; consulting with experts experienced in collecting and using THA and TKA PROM data; prospectively collecting and analyzing data to inform the development and feasibility of the measure; and extensively engaging with interested parties through a national technical expert panel, a technical advisory group, a patient working group, and multiple public comment periods.

Because of the lack of uniformly collected, large-scale PROM data available on elective, primary THAs and TKAs, CMS established incentivized, voluntary PROM data collection within the CJR model in November 2015 in order to support the development of the measure[13]. Hospitals participating in the CJR model were incentivized to voluntarily collect and submit PROM data from patients before and after an elective THA or TKA. Successful submission of PROM data increased the composite quality score of the hospital and could positively affect model reconciliation payments. CMS implemented a 5-year data collection plan that started in 2016. Requirements for successful submission of PROM data on eligible elective, primary THAs and TKAs were identified by CMS in the 2015 CJR Final Rule. The THA/TKA PRO-PM was developed and tested with use of PROM data and risk variables collected from and submitted by CJR-participating hospitals during this time frame.

The THA/TKA PRO-PM is the first of its kind to integrate patient perspectives on pre- and postoperative pain levels and functional abilities in the determination of measurement outcomes. The PRO-PM aims to foster patient-provider collaboration and shared decision-making throughout treatment. Specifically, it gauges hospital success in improving self-assessments related to pain and functioning per the hip and knee replacement care standards of the National Quality Forum (NQF #3559). The PRO-PM provides quantitative insights into the patient experience that can inform quality-improvement efforts.

CMS plans to implement the THA/TKA PRO-PM in phases, with 2 voluntary reporting periods in 2025 and 2026 and mandatory public reporting in 2027. Data collection for the first round of voluntary reporting began in Fall 2022. The Hospital IQR program invites participation from all eligible hospitals during voluntary data submission periods leading

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up to 2027, at which point mandatory reporting on patient-reported outcomes will become integral for determining a hospital's Annual Payment Update from CMS. To optimize the chances of meeting the IQR requirement for reporting on at least 50% of patients, CMS recommends complete data collection and submission for over half of eligible cases. Beginning in fiscal year 2028, hospitals that fail to meet the 50% minimum reporting threshold will receive payment reductions. Participation in voluntary reporting allows hospitals time to incorporate PROM data collection into their clinical workflows and provides an opportunity to test PROM data submission to CMS before public reporting. An additional benefit of participation is that hospitals will receive confidential feedback reports with information on PROM response rates and measure results. Participation also presents an opportunity for hospitals to improve patient care and outcomes through an enhanced understanding of the patient perspective and areas needing quality improvement.

What Is the PRO-PM Timeline? Key Dates for Data Collection and Submission

The upcoming voluntary and mandatory reporting periods for the THA/TKA PRO-PM have set time frames for data collection and submission. For the 2025 voluntary reporting period, hospitals need to collect preoperative PROM data on eligible procedures performed from January 1 to June 30, 2023, and submit these data by October 2, 2023. Postoperative data for these procedures should be collected from October 28, 2023, to August 28, 2024, and submitted by September 30, 2024. For the 2026 voluntary reporting period, preoperative data on eligible procedures performed from July 1, 2023, to June 30, 2024, need to be submitted by September 30, 2024. Postoperative data for these procedures should be collected from April 26, 2024, to August 29, 2025, and submitted by September 30, 2025. Finally, for the 2027 mandatory reporting period, preoperative data on eligible procedures performed from July 1, 2024, to June 30, 2025, need to be submitted by September 30, 2025, and postoperative data, by September 30, 2026. This

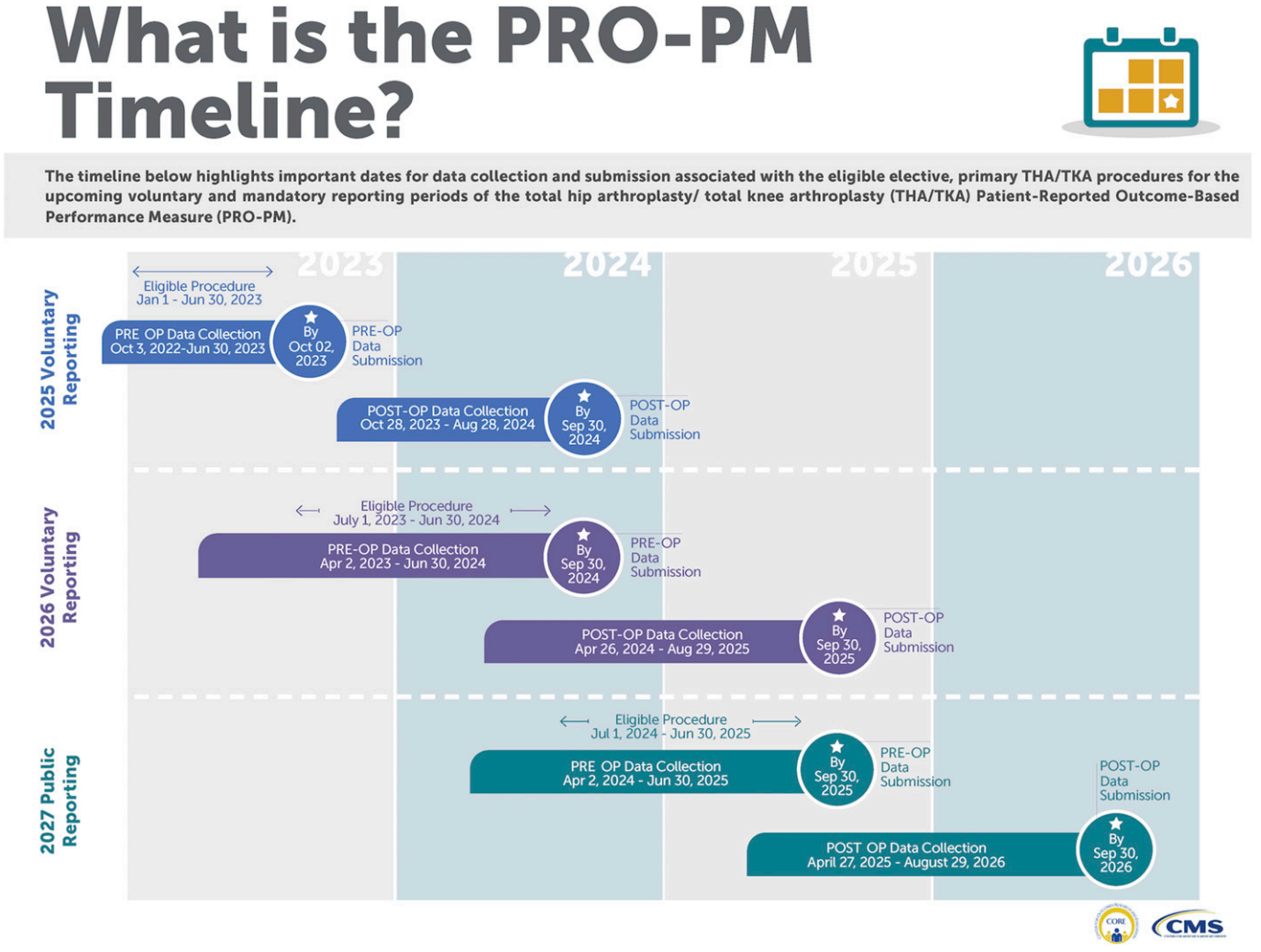

Fig. 1

Important dates for the collection and submission of data on eligible elective, primary THAs and TKAs performed during the upcoming voluntary and mandatory reporting periods for the THA/TKA PRO-PM. Reproduced from: QualityNet. https://qualitynet.cms.gov/inpatient/measures/THA_TKA

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timeline gives hospitals time to gather complete pre- and postoperative PROM data on eligible elective, primary THAs or TKAs in each reporting period. Details are provided in Figure 1.

What Data Are Going to Be Collected? Required PROM Instruments and Data Elements

The THA/TKA PRO-PM requires pre- and postoperative collection of PROM data as well as patient and provider-reported risk variables. Specifically, hospitals need to collect the following information preoperatively: joint-specific PROM data using the Hip disability and Osteoarthritis Outcome Score for Joint Replacement (HOOS, JR) survey for THAs or the Knee injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS, JR) survey for TKAs, responses to mental health subscale items from the Patient-Reported Outcomes Measurement Information System-Global or Veterans RAND-12 global health survey, health literacy

What Data Should I Collect?



The hospital-level Total Hip Arthroplasty/Total Knee Arthroplasty (THA/TKA) Patient-Reported Outcome-Based Performance Measure (PRO-PM) requires collection of preoperative and postoperative patient-reported outcome (PRO) data to (I) match to claims data and (II) calculate a risk-adjusted measure outcome. The data elements hospitals will need to collect and submit for each patient for the measure can be found below.

Data Element Type	Preoperative Data Elements	Postoperative Data Elements
Patient-Reported Outcome Measures (PROMs)	THA patients: HOOS, JR TKA patients: KOOS, JR	THA patients: HOOS, JR TKA patients: KOOS, JR
Patient- or Provider-Reported Risk Variables	Mental Health Subscale items from either PROMIS-Global or VR-12	N/A
	Health Literacy (SILS2)	
	BMI or Height/Weight	
	Use of Chronic Narcotics	
	Total Painful Joint Count: Patient-Reported Pain in Non-Operative Lower Extremity Joint	
	Quantified Spinal Pain: Patient-Reported Back Pain, Oswestry Index Question	
Matching Variables	Medicare Provider Number	Medicare Provider Number
	MBI	MBI
	Date of Birth	Date of Birth
	Date of Procedure	Date of Procedure
	Procedure Type	Procedure Type
	Date of Admission	Date of Admission
PROM-related Variables	Date of PRO Data Collection	Date of PRO Data Collection
	Mode of Collection	Mode of Collection
	Person Completing the Survey	Person Completing the Survey
	Generic PROM Version	N/A

BMI: Body Mass Index; HOOS, JR: Hip dysfunction and Osteoarthritis Outcome Score for Joint Replacement; KOOS, JR: Knee injury and Osteoarthritis Outcome Score for Joint Replacement; PROMIS-Global: Patient-Reported Outcomes Measurement Information System; SILS2: Single Item Literacy Screener; VR-12: Veterans Rand-12; MBI: Medicare Beneficiary Identifier; PROM: Patient-reported Outcome Measure

Fig. 2

Preoperative and postoperative collection of patient-reported outcome data. Reproduced from: QualityNet. https://qualitynet.cms.gov/inpatient/measures/THA_TKA

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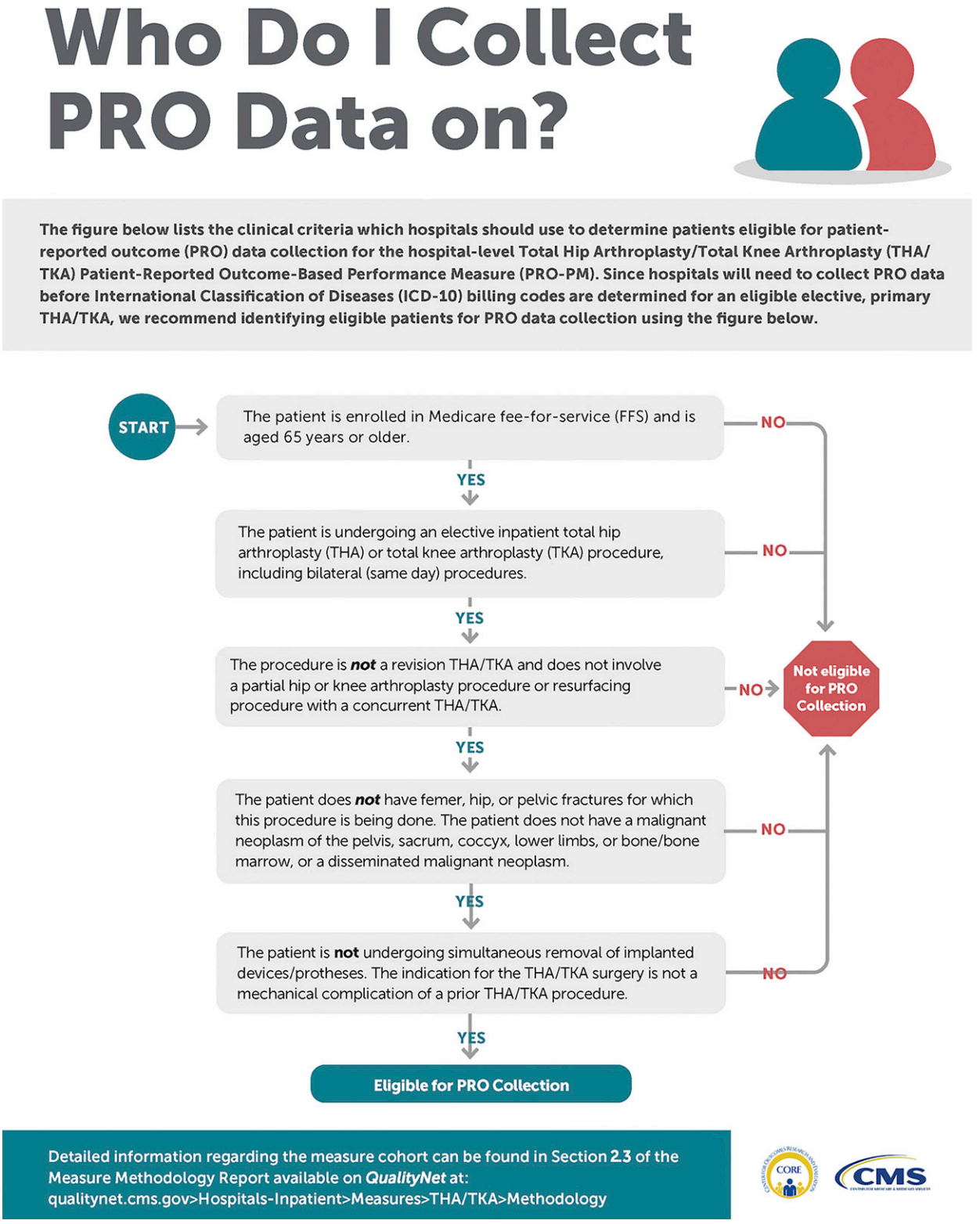

Fig. 3

Patient eligibility for data collection for the hospital-level THA/TKA PRO-PM. Reproduced from: QualityNet. https://qualitynet.cms.gov/inpatient/measures/THA_TKA

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How and When Can Patient-Reported Outcome (PRO) Data be Collected?



The Centers for Medicare and Medicaid Services (CMS) supports flexibility in collecting PRO data. Hospitals can collect PRO data using methods that align with their clinical workflow and patients' preferences. Below are some of the options that hospitals can use. Feedback from providers and patients indicated that allowing options for collecting PRO data may increase response rates.

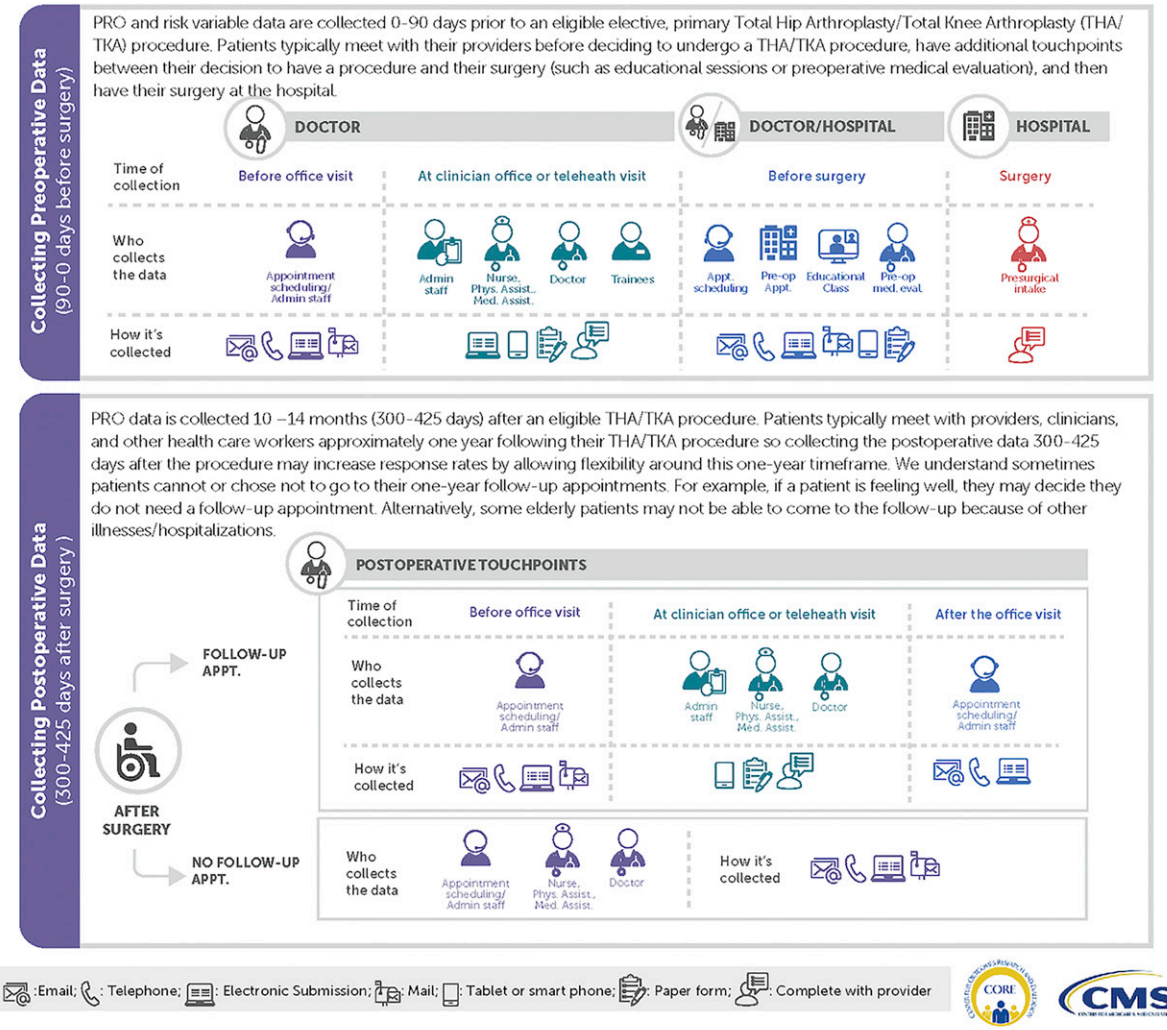

Fig. 4

Methods for preoperative and postoperative data collection that hospitals can implement. Reproduced from: QualityNet. https://qualitynet.cms.gov/inpatient/measures/THA_TKA

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Hospital-level Total Hip Arthroplasty/ Total Knee Arthroplasty Patient-Reported Outcome-Based Performance Measure (THA/TKA PRO-PM) Fact Sheet

The goal of the hospital-level THA/TKA PRO-PM is to measure improvement in patient's self-assessment of their pain and functional status prior to and after their elective, primary THA/TKA procedure. The hospital-level THA/TKA PRO-PM is the first ever PRO-PM of its kind which uses the patient's voice directly in the measure outcome and promotes collaboration and shared decision-making between patients and providers across the full spectrum of care.

Who is included?

The measure cohort includes patients:

- Enrolled in Medicare fee-for-service (FFS)
- Aged 65 years or older
- Who underwent an elective, primary THA and/or TKA

What are the data sources?

- Patient-reported outcome (PRO) and risk variable data (to identify the measure outcome and some risk variables)
- Administrative claims data (to identify the measure cohort and risk variables)
- Medicare enrollment and beneficiary data (to identify the measure cohort)

When are PRO Data Collected?

Hospitals need to collect PROs before and after an elective, primary THA/TKA.

- Preoperative PRO data: collected 90 to 0 days before the procedure.
- Postoperative PRO data: collected 300 to 425 days after the procedure.

What is included in the risk model?

The measure accounts for patient risk factors obtained from a patient's 12-month administrative claims history as well as preoperative patient- or provider-reported risk variables.

How is non-response accounted for?

Since responding to PRO data is voluntary, we understand the importance of accounting for non-response. Therefore, the measure uses a statistical approach called inverse probability weighting (IPW) to consider patient characteristics of all eligible THA/TKA patients to address potential non-response bias.

Where can I learn more?

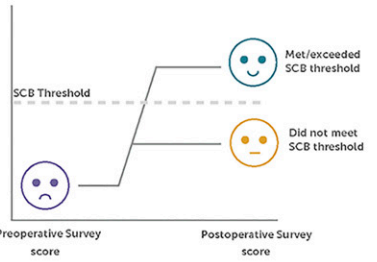
You can find detailed measure specifications in the Measure Methodology Report available on *QualityNet* at: qualitynet.cms.gov>Hospitals-Inpatient>Measures>THA/TKA>Methodology

What is the measure outcome?†

- The THA/TKA PRO-PM evaluates the hospital-level risk-standardized improvement rate (RSIR) in patient-reported outcomes following elective, primary THA/TKA.
- The measure outcome defines patient improvement as a binary outcome (Yes/No) based on whether they met or exceeded the substantial clinical benefit (SCB) threshold (see figure below) on the joint-specific surveys. The following are the SCB thresholds for the surveys utilized by the THA/TKA PRO-PM:
  - HOOS,JR: 22 points
  - KOOS,JR: 20 points

Patient-Level Outcome*

Patients who meet or exceed SCB thresholds



Hospital-Level Outcome**

Proportion of patients who meet or exceed the SCB thresholds



Risk-standardized improvement rate = 60%
OR
60% of patients at this hospital had a substantial improvement after their procedure

*Only patients who meet/exceed the SCB threshold will be included in the measure outcome. **Hospitals and consumers can utilize the hospital-level outcome (RSIRs) to understand a hospital's rate of patient improvement in pain and function after elective, primary THA/TKAs. † National Quality Forum (NQF) #3559, Hip dysfunction and Osteoarthritis Outcome Score for Joint Replacement (HOOS, JR), Knee injury and Osteoarthritis Outcome Score, for Joint Replacement (KOOS, JR)

Fig. 5

Hospital-level THA/TKA PRO-PM outcome. Reproduced from: QualityNet. https://qualitynet.cms.gov/inpatient/measures/THA_TKA

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level using the Single Item Literacy Screener, body mass index or height and weight, chronic narcotic use, patient-reported painful joint count, and patient-reported quantified spinal pain using the Oswestry Disability Index. Postoperatively, hospitals need to collect joint-specific PROM data using the HOOS, JR survey for patients undergoing a THA or the KOOS, JR survey for patients undergoing a TKA[15,16]. Additional data needed include Medicare identifiers (i.e., Medicare Provider Number, Medicare Beneficiary Identifier) to link patients, demographic details (i.e., date of birth, date of procedure, procedure type), admission details (i.e., date of admission), and PROM data collection details (i.e., date, mode, person completing). PROM data are collected directly from patients by providers pre- and postoperatively. Medicare administrative claims data are utilized to identify the measure cohort and relevant clinical risk variables in the 12 months prior to surgery. In summary, the THA/TKA PRO-PM leverages multiple data sources, including pre- and postoperative PROM data collected by the provider as well as administrative claims and enrollment files, in order to calculate hospital-level risk-standardized improvement rates (RISRs) following elective, primary THAs and TKAs (Fig. 2).

Whom Do I Collect PROM Data from? Inclusion and Exclusion Criteria for PROM Data Collection

Hospitals should collect pre- and postoperative PROM data from patients who are ≥65 years old; enrolled in Medicare Fee-for-Service; and undergoing an inpatient elective, primary THA or TKA (Fig. 3). This includes patients undergoing a bilateral procedure. Patients undergoing a revision procedure, partial joint procedure, resurfacing procedure, or procedure for fracture, malignancy, infection, or mechanical complication should not have PROM data collected in this program. In essence, PROM data should be collected from Medicare beneficiaries undergoing an elective, primary THA or TKA for osteoarthritis or a similar degenerative joint disease indication. Since hospitals need to collect preoperative PROM data before the International Classification of Diseases, 10th Revision procedure codes are finalized, it is recommended to use the clinical criteria outlined above to identify eligible patients rather than relying solely on codes. The goal of this program is to collect PROM data to assess improvements in patient pain, functioning, and quality of life following elective, primary THAs and TKAs.

How and When Are Data Going to Be Collected? Strategies to Maximize PROM Response Rates

One major challenge in collecting PROMs longitudinally is attrition due to loss to follow-up over time, which can lead to substantial bias and skewed results in prospective cohort studies. Compliance with routine clinical follow-up appointments 1 year after arthroplasty has been reported to be as low as 35% in some studies[6,17,18]. Therefore, CMS supports flexibility in how hospitals collect required PROM data so that data collection can align with clinical workflows and patient preferences. Integrating the review of PROM results into clinical interactions and decision-making may improve patient interest in completing such measures. Data can be collected at various points of contact preoperatively and postoperatively by different members of the care team. Preoperative PROM data can be collected up to 90 days preoperatively by administrative staff, nurses, physician assistants, doctors, or trainees during appointment scheduling, preoperative evaluations, or educational sessions. Postoperative PROM data should be gathered 300 to 425 days postoperatively, again by clinical or administrative staff during follow-up appointments, telehealth visits, or other forms of outreach if no follow-up visit occurs. CMS recognizes that allowing options for the timing of data collection and the mode of collection, including paper, online, email, tablet, phone, or in-person with staff, may improve response rates. The key is that complete preoperative data are collected 0 to 90 days before an eligible elective, primary THA or TKA and that postoperative data are gathered 300 to 425 days postoperatively, within the window that captures the full recovery of patients (Fig. 4).

What Is the Outcome? Defining Success with Use of PROM Thresholds

The THA/TKA PRO-PM evaluates the hospital-level RSIR in PROMs following elective, primary THA and TKA procedures. The measure defines patient improvement as a binary yes-or-no outcome that is based on whether the difference in a patient's pre- and postoperative scores on a joint-specific PROM meets or exceeds a predetermined substantial clinical benefit (SCB) threshold. SCB thresholds were established on the basis of extensive research by the PROM developers in which anchor-based methods and patient input were utilized to determine the magnitude of score change that patients equate with meaningful improvements in their pain, functioning, and quality of life postoperatively[19]. Some studies have found that these thresholds can accurately identify clinically meaningful outcomes, whereas others have argued that these thresholds may oversimplify complex patient experiences and fail to fully capture patient perspectives on surgical success[20].

For patients undergoing a THA, the SCB threshold is an increase of ≥22 points on the HOOS, JR survey[19]. The HOOS, JR contains 6 questions assessing hip-related pain, functioning, and quality of life. For patients undergoing a TKA, the SCB threshold is an increase of ≥20 points on the KOOS, JR survey[19]. The KOOS, JR contains 7 questions assessing knee-related pain, stiffness, and functioning.

At the patient level, the outcome is simply whether or not the difference between a patient's pre- and postoperative PROM scores meets the joint-specific SCB threshold for improvement. At the hospital level, the outcome is the risk-standardized proportion of patients undergoing elective, primary THA or TKA at that hospital for whom the SCB threshold for improvement on the joint-specific PROM was achieved (Fig. 5). This hospital-level RSIR reflects the rate of clinically meaningful improvement in pain, functioning, and quality of life postoperatively, accounting for differences in patient populations between hospitals.

Challenges in Collecting PROMs

In a November 2021 response letter to CMS, the American Association of Hip and Knee Surgeons (AAHKS) and the American Academy of Orthopaedic Surgeons (AAOS) raised

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concerns regarding the feasibility and burden of implementing the PRO-PM at the clinician and group level, citing issues such as costs, infrastructure, and patient participation[21]. Indeed, the collection of PROMs presents several challenges that physicians should consider during implementation. The availability of measures that are concordant with the languages and cultures of non-English-speaking patients is one such consideration, as translations and cultural adaptations of PROMs are needed. Survey completion may be difficult for patients with low literacy or low health literacy, indicating a potential need for alternate modes of data collection, such as interviews. The implementation of infrastructure and workflows within practices to routinely collect PROMs at the appropriate time points presents an administrative burden. The costs associated with PROM collection, including staff time, are currently not reimbursed, which presents a financial disincentive. Some patients may not wish to complete surveys or may face barriers to doing so, leading to missing data. Finally, although PROMs capture the perspectives of patients, they may not fully capture all aspects of clinical outcomes, meaning that risk adjustment is needed to account for factors such as baseline status.

Conclusions

CMS has finalized an important new policy to advance the collection and reporting of PROMs following THAs and TKAs. This phased approach aims to gather meaningful pre- and postoperative data directly from patients to enhance clinical care, shared decision-making, and quality measurement. Although reporting will be voluntary at first, it will be mandatory starting in 2027, a requirement that underscores the value of incorporating the patient perspective and PROMs into national assessments of care quality and transparency.

For orthopaedic surgeons, this policy warrants attention and preparation. Participation in the initial voluntary reporting periods will allow time to adapt workflows and data collection protocols. It will also provide an opportunity for surgeons to gain experience collecting and leveraging PROM data in order to improve patient care. As value-based payment models expand, PROM and quality performance on measures such as the THA/TKA PRO-PM may have increasing relevance. The collection of meaningful PROM data and achievement of strong results on the THA/TKA PRO-PM could become a competitive advantage. Most importantly, the optimization of postoperative PROMs and patient-centered outcomes should remain the key priority. This CMS policy elevates the patient voice in defining quality care, and keeping patient perspectives central will be essential for delivering excellent arthroplasty care into the future. ■

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